RFI 127
Pebble Project EIS

Request for Information

Title/Subject:	**Alternative Road Alignment to Avoid Pedro Bay Corporation Lands**
Requestor:	**USACE**
Date Transmitted:	**7/17/2019**
Recipient:	**Pebble Limited Partnership**
Response Requested by:	**7/30/2019**
Rationale:	USACE received a letter dated July 1, 2019 from Matt McDaniel of Pedro Bay Corporation stating that PBC has not, and will not, consent to PLP's use of its lands for the Pebble Project. The Draft EIS includes Alternatives 2 and 3 which would have the transportation corridor routed across PBC lands.
Describe the Information Requested and Level of Detail:	Please evaluate alternate road/pipeline alignments to determine if there is a reasonable and practicable route on the north side of Iliamna Lake that would avoid PBC lands.

Recipient Response Form

Date Received from USACE:	
Response from Recipient (Describe Information Requested to the Level of Detail Requested; Provide Attachments as Needed):	**Please see attached report from Rowland Engineering Consultants**
List Number and Type of Response Attachments:	**RFI127 Pebble Access Feasibility North of Pedro Bay.pdf**
Date Returned to USACE:	

AECOM Intake Form

Date Response was Received:	**7/23/2019**
Received by:	**AECOM**
Describe any Follow-up Related to this RFI:	Click here to enter text.

Rowland Engineering Consultants

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907.746.3630 · 907.355.3006 cell · steve@reconllc.net

TECHNICAL MEMORANDUM

To: **James Fueg**
From: **RECON, LLC: Steven Rowland, PE**
Subject: **Response to Pebble Project EIS RFI 127**
Date: **July 19, 2019**

Summary
RFI 127 Pebble Project EIS includes the following request: "Please evaluate alternative road/pipeline alignments to determine if there is a reasonable and practicable route on the north side of Iliamna Lake that would avoid PBC lands."

RECON has completed the requested evaluation and determined that due to adverse terrain conditions no reasonable or practicable route alternative exists.

Route Alternative Evaluation Process
Following is a list of parameters considered when evaluating access route corridors:

- road design criteria and purpose
- terrain characteristics and how they would affect constructability and road geometry
- construction material availability
- environmental impacts
- general subsurface conditions such as soil type, groundwater, and permafrost
- stream crossings required and characteristics of the crossings
- geohazards and their potential to impact development and operations
- wetlands impact extent, and potential effect on constructability
- viewshed analysis determining potential impacts to regional aesthetics
- wind exposure and assessment of snowdrift impact potential
- road geometry and associated impacts to road serviceability and safety
- constructability and impacts on project schedule and cost
- elevation gain and loss
- vegetative ground cover type and extent
- access to a viable port site
- mine to port haul distance
- condition of existing access infrastructure, including roads and bridges
- land status and ownership
- operational constraints that may be imposed or inherent

For the subject proposed route alternative, the focus is on terrain character and constructability, and the constraints that these impose on a potentially viable route. To assess the terrain that would be traversed RECON reviewed topographic maps and imagery that are readily available for the subject area. The author of this memo has also relied on personal knowledge of the project area which he has visited numerous times for purposes of road and pipeline route

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selection. Attached to this Memo is a map at a scale of 1:63,360 (1 inch = 1 mile) that covers the entire area for consideration of an alternate route.

Route Alternative Description

The area identified for consideration of an alternate road/pipeline route is defined by a narrow corridor north of Pedro Bay Corporation (PBC) land and south of Lake Clark National Park and Preserve (LCNPP). This approximately 40 mile long corridor passes through the Chigmit Mountains, from roughly Chekok Creek on the west end to the head of Iniskin Bay on the east end. The terrain is characterized by north south trending glacial carved valleys separated by steep sloped mountains with high cirques and arête ridges that rise 3,000 to 4,000 feet above the valley floor. There are six major valleys that would be crossed by a road route with five mountainous ridgelines separating each. In addition, a road route would traverse a narrow steep sloped mountain valley and a pass between the Iliamna River and the head of Iniskin Bay. Major river valleys that define the route include the following: Canyon Creek, Knutson Creek, West Branch Pile River, Pile River, West Branch Iliamna River, and Iliamna River. The alternate road route would include at least six mountain passes with elevation ranging from 1,000 to 3,000 feet. The alternate route would also require construction for several miles along the west side of Iniskin Bay to a port site that would have to be developed at a point with deep water access. The road in Iniskin Bay would be constructed in the intertidal zone to avoid rock-slide and avalanche hazards.

Terminating an access route in Iniskin Bay was found to be the only reasonable route to consider for comparison to the current route to Iliamna Bay due to the Iniskin option being much shorter and with far fewer impediments due to terrain than a north route option terminating in Iliamna Bay. Several additional high passes and very steep mountainous terrain would have to be negotiated in order to terminate a north route option in Iliamna Bay. In addition, a route into Iliamna Bay would be far longer that a route terminating at a port site in Iniskin Bay.

Route Issues

Any road/pipeline route north of PBC land would either require 12-15 miles of tunnel or extreme mountain road construction that would be subject to numerous geohazards and impose operational constraints that would be debilitating to mine operations. The constructed road length for the north alternate would be approximately sixty percent longer than the current proposed route through PBC land. Cost to construct a road and pipeline in this terrain would be many times greater than the current identified route through PBC land. The route segment from the head of Iniskin Bay to a functional port site would require location of the road embankment within the intertidal zone; and would be as much as four times the cost of conventional road construction while potentially increasing project environmental impacts. Due to difficulty of construction through the mountainous terrain and in Iniskin Bay, the construction duration would likely extended by one to two years.

Conclusion

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Given the adverse nature of the terrain that exists north of PBC land, and the constraints imposed by design criteria for a road to serve the proposed Pebble Mine; it has been determined that construction and operation of a road that would pass north PBC lands is not practical or reasonable.

154°30'0"W 154°20'0"W 154°10'0"W 154°0'0"W 153°50'0"W 153°40'0"W 153°30'0"W

59°10'0"N 59°0'0"N 58°50'0"N

Nondalton (Village)

Lake Clark National Park and Preserve

Lake Clark National Park and Preserve

PEDRO BAY CORPORATION

Iliamna Natives Limited

Bristol Bay Native Corp.

Pedro Bay Airport

Alaska Peninsula Corporation

Cook Inlet Region Inc. Regional Selection

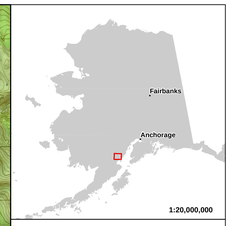
Tyonek Native Association

Seldovia Native Association

SALAMATOF NATIVE ASSOC INC

Cook Inlet Region Inc. Interim Conveyed Land

Ninilchik Native Association



RECON LLC

PEBBLE LTD.
Pedro Bay
Area of Interest

Legend

Village Corporations/Native Allotments

- CIRI Regional
- Cook Inlet Region Inc. Interim Conveyed Land
- Ninilchik Native Association
- Salamatof Native Association Inc.
- Seldovia Native Association
- Tyonek Native Association
- Pedro Bay Corporation
- Iliamna Natives Limited
- Alaska Peninsula Corporation
- Nondalton (Village)
- Native Allotment
- State of Alaska, Bristol Bay Native Corporation

National Parks

- Lake Clark National Park and Preserve

Parks and Other Areas

- National Park & Preserves

1:63,360 N 7/18/2019

Map and Engineering by RECON LLC
481 W. RECON Cir, Palmer AK 99645
NAD 1983 Alaska SPCS Zone 5 (Feet)
Basemap by CalTopo

1 in = 1 miles

0 0.75 1.5 2.25 3 Miles

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